

INTERNATIONAL PRELIMINARY
EXAMINATION REPORT -
SUPPLEMENTARY SHEET

International Application
No PCT/FR 03/02999

Concerning Point V

Reasoned assessment relating to novelty, inventive step and industrial applicability; citations and explanations to support this assessment

5 1 This International Preliminary Examination Report refers to the following documents, which are cited in the International Search Report:

D1: US-A-3 904 933 (DAVIS RONALD E) (1975-09-09)

D2: EP-A-0 545 563 (SUN MICROSYSTEMS INC) (1993-06-09)

10 D3: US-A-3 648 113 (RATHJEN J FRED ET AL) (1972-03-07)

D4: EP-A-0 560 502 (MATSUSHITA ELECTRIC IND CO LTD)
(1993-09-15)

15 2 The present application does not fulfill the conditions set out in Article 33(1) PCT, the subject-matter of **claims** 1-5, 8, 9, 11, 13, 14, 16-22 not conforming to the **novelty** criterion defined by Article 33(2) PCT.

2.1 As regards independent claim 1, document **D1** describes an electronic substrate suitable for being included in a stack containing said electronic substrate and at least one
20 other electronic substrate and suitable for being connected to the other electronic substrate(s) and optionally to an input-output interface (see D1, figure 1, references 20, 45), said electronic substrate comprising a frame consisting of a material with a high thermal conductivity
25 (see D1, figures 1 and 2, reference 22; column 3, lines 11-14) comprising a plurality of sides, at least one first side of which is intended to be in contact with the corresponding side of the frame of another (or the other) neighboring substrate(s) (see D1, column 4, lines 1-5) so
30 as to provide thermal dissipation of the electronic substrates (see D1, column 5, lines 11-16) and at least one second side of which comprises an interconnection element intended to provide electrical interconnection between said electronic substrate and the other electronic substrate(s)

(see D1, figure 1, reference 31; column 3, lines 19-22) and/or between said electronic substrate and the input output interface.

Consequently, all the technical characteristics of claim 1
5 are described by document D1, and said claim 1 is not novel (Article 33(2) PCT).

Furthermore, the subject-matter of claim 1 is also not novel with respect to the disclosure of document D2 (see D2, figure 1), according to which the electrical connection
10 between the electronic substrates is provided by interconnection elements which form the two sides of a frame around the electronic substrates (see D2, figure 3, reference 20) and which at the same time constitute the routing circuit (see D2, column 6, lines 39-49).

15 2.2 Dependent claims 2, 3-5, 8, 9, 11, 13, 14, 16-22 do not contain any characteristic which, in combination with those of any one of the claims to which they refer, defines subject-matter which satisfies the requirements of the PCT as regards novelty (Article 33(2) PCT), specifically for
20 the following reasons:

a) (claim 2) document D1 describes that the frame includes a bottom also consisting of a material with a high thermal conductivity (see D1, column 3, lines 24-31);

25 b) (claim 3) document D2 likewise describes that the frame includes a bottom also consisting of a material with a high thermal conductivity (see D2, figures 1, references 10 and 11) and that it includes a phase-change cooling element (see D2, column 2, lines 34-30 43);

c) (claims 4 and 5) the presence of conductive tracks is a characteristic common to all electronic substrates, and document D1 describes conductive elements which make it possible to connect the
35 circuits mounted on the various electronic substrates

through a routing circuit (see D1, figures 1 and 2, references 31, 32; column 3, lines 19-22);

5 d) (claims 8 and 9) reversible positioning means are described by document D1 (see D1, figure 1, reference 35; figures 3) and by document D2 (see D2, figure 4, reference 40); document D2 describes that these positioning means are pins.

10 e) (claim 11) document D2 describes of the use of an adhesive for fastening the substrate to its frame (see D2, column 6, lines 28-39);

f) (claim 13) document D2 describes that the electronic substrate includes a ceramic support (see D2, column 5, line 55 - column 6, line 4);

15 g) (claim 14) the frame as described by D1 have the structure claimed in claim 14 (see D1, figure 1, references 22, 23, 31);

20 h) (claims 16 and 17) document D1 describes an electronic module comprising an input-output interface, a stack of a plurality of electronic substrates and a package (see D1, figure 1, references 11, 12, 13, 15, 45, 40, 41);

25 i) (claims 18, 19, 20 and 22) the input-output interface of document D1 may be considered the cover of the structure, it includes reversible fastening means and it is used to stabilize the framed substrates in the package; the external profile of the frames is complementary to that of the package (see D1, figure 1, column 4, lines 25-42);

30 j) (claim 21) the package of document D1 consists of a material with a high thermal conductivity (see D1, abstract).

35 3 Dependent **claims 6, 7, 10, 12 and 15** do not contain any characteristic which, in combination with those of any one of the claims to which they refer, defines a subject-matter which satisfies the requirements of the PCT as regards the

inventive step as defined by Article 33(3) PCT, specifically for the following reasons:

- 5 a) (claim 6) conductive element comprising conductive rings are described by D4 (see D4, figure 25, reference 26); the use of insulating elements to avoid accidental contact is a normal technical approach for the person skilled in the art;
- 10 b) (claim 7) document D1 describes multilayer electronic substrates (see D1, new column 3, lines 23-24); the person skilled in the art would have no hesitation in adopting a multilayer structure for the routing circuit as well, if the density of the interconnections so required;
- 15 c) (claim 10) the use of centering pins to position each substrate in its frame is only one of the possibilities which the person skilled in the art could choose, depending on the case in point, from among a plurality of obvious possibilities in order to solve the problem of positioning the substrate, without any inventive step being involved.
- 20 d) (claim 12) document D3 describes the use of aluminum as material with a high conductivity for frames as claimed in claim 1 (see D3, column 4, lines 23-25);
- 25 e) (claim 15) the person skilled in the art selects the dimensions of electronic substrates according to constraints imposed by the application.

4 All of **claims 1-22** are **susceptible of industrial application** (Article 33(4) PCT).

- 30 5 Contrary to the requirement of Rule 5.1a)ii) PCT, the description does not indicate the relevant prior art disclosed in documents D1-D4, and does not cite these documents.